

REMARKS

Applicants are submitting herewith a Supplemental Reissue Declaration by the inventors to obviate the rejection of the claims under 35 USC 251 because of a defective reissue Declaration. This was inadvertently overlooked at the time the Supplemental Preliminary Amendment was previously submitted. Entry of this Supplemental Reissue Declaration is respectfully solicited.

Claims 1-19 were pending in the application and were under rejection. Inasmuch as no amendment to the claims is being made in this Response, claims 1-19 remain in the application as they existed prior to the Office Action and no further listing of the claims is submitted at this time. If a listing is required, please advise and Applicants will promptly provide same.

Attention is now directed to the rejection of the claims under 35 USC 102 or 103.

Firstly, Applicants respectfully traverse the rejection of claims 12, 13 and 16 under 35 USC 102 as being anticipated by Mao (6,198,177, or simply '177). Those claims are similar to claims 1,2 and 6 herein (and in the patent for which this is a reissue application), except they do not specifically require the "second power source" to be "at least one fuel cell power plant". The Examiner's analysis of the Mao reference spans pages 3 and 4 of the Office Action (OA). It is instructive and important to review that analysis vis a vis what Applicant has disclosed and claimed as well as what Applicant believes Mao actually discloses.

Applicants claim first and second power sources, and include the proviso that the second power source is "adapted to be normally substantially continuously connected and providing power to, the critical load". It is clear from the disclosure, from the reference numerals in the claims, and from dependent claims 16 and 6, that the "first power source" is typically the grid, and that the "second power source" is, for example, one or more fuel cell power plants. Importantly, Applicants' claims do not use the terms "primary" and "secondary" source as the Examiner has done parenthetically because Applicants' second (but not secondary) power source is effectively a co-source with the first source, providing power to the load(s) at the same time as the first source, and is intended to continue to supply power to the load(s) even at such time as the first source is

disconnected from the second source and the load(s). This differs greatly from the grid 110 and battery charger 115 disclosed in Mao.

Applicants further claim “a static switch for selectively connecting and disconnecting the first power source to the second power source and to the critical load”. In this way the static switch, under the control of a switch controller, serves to rapidly disconnect the first power source, e.g., the grid, from the second power source and the load(s) when operation of the first power source “deviates beyond a limit from normal”. Not only must the static switch be capable of rapid switching action, but so too must the switch controller (eg. 49, 45) that controls the switch. Note also that this switch and controller are responsible both for rapid disconnection and rapid reconnection (claims 2 and 13) of the first source to the second source and load(s). It is respectfully submitted that the following discussion of the Mao reference will clearly emphasize the deficiencies of that reference in each of these regards.

Firstly, as distinguished in the Applicants’ description of the Background Art, while some systems (see Fig. 1) rely on a primary power source and a battery back-up source (as also in the Mao reference cited by the Examiner), the present invention is simply not concerned with such a configuration. Clearly Mao relies on a battery back-up, as noted in Col. 2, line 50 thereof, and in a manner that is completely inconsistent with the wording of Applicants’ claims 1 and 12. Nowhere is it evident in Mao that the back-up battery is connected and serving as a power source that is “normally substantially continuously connected and providing power to, the critical load”. Rather, Mao contemplates the normal mode of operation as being “where power is supplied through the primary power stage 110” (Col. 6, lines 32 and 33), and a separate back-up mode in which the back-up power stage 115 provides the power in the absence of the primary source (Col.5, line33 to Col. 6, line 18). Thus, the battery of Mao is a load during normal operation of the grid, which is in distinct contrast with the Applicants’ second power source connected to normally continuously provide power to the load(s).

The Examiner further states, on page 3 of the Office Action, that Mao discloses, in column 6, lines 32-43, “ a static switch for selectively connecting and disconnecting the first power source to the second power source and to the critical load”. However, in fact, the two sources 110 and 115 are the grid and a battery charger, and the switches

being referred to (S5, S6 in column 5) are not used for switching the two power sources. Rather, they are for operating the battery charger in “buck” (charge) or “boost” (discharge) mode. When the primary source is supplying the load, the second “source” is actually another load, the battery, being charged by the primary source via the switches S5 and S6 which deliver rectified ac (dc) power from the primary source to the battery. When the primary source does not function, the same two switches S5, S6 change control mode to deliver power from the battery to the load.

On the other hand, in the present invention the purpose of the “static switch” is very different. It serves a different function, that being to disconnect the primary source from the secondary source and the load. It has no “buck” or “boost” function, but rather is a rapidly-acting isolation switch that disconnects and reconnects the first power source with the second power source and load(s). It is not apparent that Mao’s primary power source is actually disconnected from the load by a static switch, but rather, only the absence of voltage V_{in} is sensed and then the back-up power stage 115 is permitted to begin supplying power to the load.

Still further, although the Examiner states that Mao must have a switch controller to control “the static switch” and Applicants will acknowledge that some controller probably does exist, it is instructive to note that Mao says, at Col. 5, line 51, that “a control circuit (not shown) senses an absence of input voltage V_{in} ”, and at Col. 5, line 13 “the control circuit (managing the transition between the operating modes) . . .”, but no further mention is made of a control circuit. It is clear that there is no teaching of a switch controller that effects the rapid switching action of the present static switch to obtain the claimed cooperative functions of the present first and second power sources relative to the load(s).

Regarding the rejection of claim 16 (and thus also claim 6), Applicants acknowledge that their “first power source” and the supply to Mao’s primary power stage are both the AC power grid, but there the similarity stops. Claim 16 requires far more than is disclosed in Mao, as set forth by “at least one power conditioning system for configuring operation of the second power source in a grid connected mode or in a grid independent mode in response to mode control signals . . .”. The Mao reference is devoid of any meaningful disclosure in this regard.

Attention is now turned to the rejection of claims 1-11, 14, 15, and 17-19 on pages 3 - 7 of the OA. Those claims are rejected under 35 USC 103(a) as being unpatentable over Mao in view of Welches (US 2003/0012038). Applicants respectfully traverse that rejection, firstly on the basis that Mao is not applicable for the reasons given above and further, for the following reasons challenging the applicability of Welches in combination with Mao.

The claims 1-11 are the same as in the U. S. Patent 6.465,910 for which this is a reissue application, and include recitation of the second power source including “at least one fuel cell”, whereas claims 12 – 19 do not include that particular recitation. The Examiner has combined Welches with Mao for the former reference’s mention of using local power systems such as fuel cells and microturbines, interconnected with the grid, as at paragraph 0006 and/or at paragraph 0072. Importantly, that simple mention fails to compensate for the numerous deficiencies in the Mao reference as a basic reference, which deficiencies are not obviated by the disclosure in Welches. More to the point, although the Examiner says it would be obvious to substitute a fuel cell for the battery of Mao’s disclosure, that is simply not the case. Mao’s disclosure is very specific as to the use of a battery as a secondary source, and the switches S5, S6 and their switch controller operate to alternately charge and discharge the battery. Such charging and discharging cannot be done with a fuel cell as the second source, and it would therefore run counter to the inventive intent of Mao to substitute a fuel cell for his back-up battery.

Further still, the Welches reference is itself deficient as a reference to be combined with Mao. Welches’ teaching of power conditioning is specific and limited to an improved method of regulating the DC Link output of a two-stage inverter in order to improve efficiency and reduce cost. It is not a general scheme for producing a system that switches between two power sources (assured power), in which one of the two sources employs an inverter that may be a two stage type (like the Welches approach) or any other type (for example a single stage type with no DC link at all). Welches is focused on a control method for only an inverter, not a system. Apart from the various deficiencies in Mao alone as a reference, the Welches reference does nothing to negate those deficiencies. The main objective of Welches is to “reduce the voltage or switching ripple

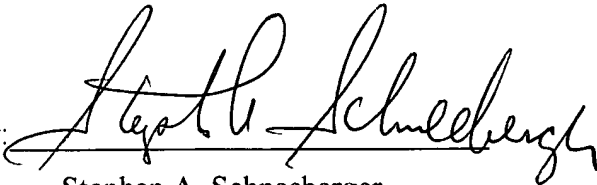
across the PWM output filter inductor” (para. 0014). That reference fails to provide disclosure or teachings sufficient to augment the deficiencies in the Mao reference.

At the bottom of page 5 of the OA in addressing the rejection of claim 6, the Examiner states that the references disclose “mode control signals (obviously included for controlling Mao’s control switches)”. This does not apply to the presently claimed invention because Mao’s controls have a completely different function, which is control battery charging and discharging. Still further, on page 6 of the OA, the Examiner indicates that the Welches controller (295) is analogous to Applicants’ site management controller, yet the two the former is seen to be a PWM controller that operates the internal inverter switches SW1-SW4 of Welches, whereas the latter is a system level controller connected intermediate the switch controller and the fuel cell power conditioning system (PCS) for controlling the PCS to rapidly configure operation of the fuel cell(s) in grid connected or grid independent mode.

On pages 6 and 7 of the OA, the Examiner takes “official notice” with respect to the switching times of claims 17-19 (and presumably also claims 7, 8 and 10, though not specifically mentioned). Applicants respectfully traverse the propriety of taking “judicial notice” in the case where specific rapid times of seamless transition are recited, as opposed to the broader earlier recitation of “rapid”. While switches and circuits may have existed with the capability of accomplishing such speeds, the Examiner has made no showing of their use with first and second power sources as in the presently recited claims.

In view of the foregoing comments, it is respectfully submitted that neither the Mao reference nor the Welches reference, either alone or in any appropriate combination, disclose or teach the invention recited in independent claims 1 and 12. Applicants’ comments and arguments herein may of course be used to define the scope of the present claims. In that regard, it is respectfully submitted that independent claims 1 and 12 and the various claims depending therefrom, clearly patentably distinguish over the cited references. Accordingly, favorable reconsideration and an indication of allowance are respectfully solicited. In the event questions or issues remain which the Examiner feels might be resolved by telephone interview, he is respectfully requested to contact Applicants’ attorney at the number below

Respectfully submitted,

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